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NATIONAL COMMUNICATIONS FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

Report on clarifications, additions and amendments to the revised guidelines for the preparation of national communications by Parties included in Annex I to the Convention (including part I of the reporting guidelines on inventories)

Note by the secretariat

Addendum

COMMON REPORTING FORMAT

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I. INTRODUCTION

A. Background

1. Experts attending the workshop on methodological issues related to greenhouse gas (GHG) inventories held in Bonn from 9 to 11 December 1998 (see FCCC/SBSTA/1999/INF.1) suggested that the secretariat prepare a draft common reporting format, in consultation with the IPCC Programme,[1] for the provision of inventory information by Annex I Parties to the Convention.

2. A first draft of the common reporting format was presented to the participants in a second workshop held in Bonn, 17-19 March 1999 (see FCCC/SB/1999/1) for their review and comments. These comments were taken into account in preparing the draft common reporting format contained in the annex to this note.

B. Scope of the note

3. The common reporting format builds on the reporting tables of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, referred to in this note as the IPCC Guidelines. It is intended to be an integral part of the UNFCCC reporting guidelines on inventories[2] (see FCCC/SB/1999/1). At the urging of the participants in the second workshop referred to in paragraph 2, the draft of the common reporting format contained in this note was put on the secretariat's Web site by 15 April 1999 to allow Parties to comment on it by 15 May 1999. These comments may facilitate the consideration by the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the draft common reporting format and the draft UNFCCC reporting guidelines on inventories.

4. The rationale and explanations of the common reporting format, presented in paragraphs 5 to 34 of this note, are intended to enhance understanding of the common reporting format. Once agreed to by Parties, the common reporting format will only contain tables and their reporting instructions.

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[1] The Intergovernmental Panel on Climate Change (IPCC) - Organisation for Economic Co-operation and Development (OECD) - International Energy Agency (IEA) Programme on National Greenhouse Gas Inventories is referred to as the IPCC Programme in this note. By decision of the fourteenth Plenary of the IPCC, the functions of this programme will be assumed by the IPCC Task Force on Inventories, to be located in Japan in 1999.

[2] "UNFCCC reporting guidelines on inventories" refers in this note to the guidelines for the preparation of national communications by Parties included in Annex I to the Convention, part I: inventories.

II. COMMON REPORTING FORMAT

A. Existing reporting practices and their limitations

5. The SBSTA, at its fourth session, concluded that Parties should use the IPCC Guidelines to estimate and report on anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol (FCCC/SBSTA/1996/20, para. 30). This was subsequently reaffirmed by decision 2/CP.3 on methodological issues related to the Kyoto Protocol (FCCC/CP/1997/7/Add.1).

6. Under the IPCC Guidelines, Parties may select from different methods (tiers) included in the guidelines, giving priority to those methods considered to produce the most accurate estimates according to the availability of data. Parties may use other comparable methodologies, which they consider better able to reflect their national situation, provided that these are compatible with the IPCC Guidelines and are well documented.

7. However, irrespective of which methodologies are applied in preparing inventories, the IPCC Guidelines request that all Parties report inventory data using the reporting framework contained in the guidelines. This currently consists of the following components:

(a) Summary report tables (IPCC Guidelines, vol. I, Reporting Instructions);

(b) Sectoral report tables (IPCC Guidelines, vol. I, Reporting Instructions);

(c) Overview Table (IPCC Guidelines, vol. I, Reporting Instructions); and

(d) Worksheets (IPCC Guidelines, vol. II, Workbook).

8. The summary, sectoral report and overview tables do not provide information on either activity data or emission factors. This information is only provided in the worksheets. However, very few Annex I Parties provide the worksheets in their inventory submissions, with the exception of worksheet 1-1, i.e. the reference approach for carbon dioxide (CO_2) emissions from fuel combustion, which has been submitted by several Parties.

9. There are many reasons for the worksheets not being submitted by Parties. These include the use of different levels of disaggregation to prepare inventories, the use of methods to prepare inventories which do not require worksheets in the requested form, the large number of worksheets requested and the fact that the worksheets are often prepared in national languages.

10. Activity data and emission factors were requested in the standard data tables of the 1995 version of the IPCC Guidelines. These tables did not provide the level of detail necessary to enable the reconstruction of an inventory, but they did assist the process of comparing activity data with international statistics and cross-comparing emission factors among Parties. They also facilitated the assessment of the transparency and completeness of the inventory data.

11. However, due to changes to some sectors introduced by the IPCC Guidelines, it is no longer possible to directly apply many of the standard data tables. Furthermore, the standard data tables did not provide for information related to some key assumptions and reporting conventions underlying the emission estimates, such as the allocation of livestock to a climate region or the use of net or gross calorific values in the energy sector calculations.

12. Neither the IPCC standard data tables nor the IPCC worksheets provide means for reporting new information requested by the UNFCCC reporting guidelines on inventories, *inter alia*, CO_2 equivalent emissions and recalculations of the base year.

B. Approach of the common reporting format

13. The draft common reporting format for the provision of inventory information by Annex I Parties was prepared with a view to overcoming the limitations discussed in the above section. It is intended that the common reporting format will ensure a minimum level of transparency, consistency, comparability and completeness in inventory information submitted to the Convention.

14. The preparation of the draft common reporting format sought to provide for, *inter alia*:

(a) The electronic submission of inventory information, leading to the improved and timely processing of inventory information and preparation of technical analysis and synthesis reports;

(b) The quick identification of possible errors, misunderstandings and omissions in inventory information as part of the technical review process;

(c) Comparisons of activity data with international statistics and checks for the consistency of activity data over time;

(d) Comparisons of aggregate emission factors among Parties and over time;

(e) The provision of aggregate CO_2 equivalent emissions;

(f) The reporting of recalculations to data previously submitted and the provision of the reasons for their recalculation; and

(g) The reporting of anticipated future improvements in methodologies.

15. The draft common reporting format maintains consistency with current IPCC reporting practices. The sectoral report tables of the reporting framework provided by the IPCC Guidelines form the core of the draft common reporting format. In order to maintain consistent

reporting across Annex I and non-Annex I Parties, these tables were not modified.[3] These tables maintain the reporting of emissions of carbon monoxide (CO), non-methane volatile organic compounds (NMVOC), nitrogen oxides (NO_x) and sulphur dioxide (SO_2), while the other tables only provide information on carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) emissions.

16. The sectoral report tables were supplemented by sectoral background data tables for providing activity data, aggregate emission factors and other key assumptions underlying the estimates of GHG emissions and removals. These are intended to enhance the transparency and comparability of inventory information and to facilitate technical reviews. The tables are aimed at facilitating comparisons of inventory data among Parties using methods with levels of complexity that may or may not be similar. Current reporting practices among Annex I Parties indicate that Parties use methods of different complexity to estimate their emissions and removals.

17. The sectoral background data tables are based on the standard data tables contained in the 1995 version of the IPCC Guidelines, but take account of methodological changes made in the 1996 version of the IPCC Guidelines. Consistency was maintained with the source/sink categories used in the IPCC Guidelines.

18. The draft common reporting format also provides a means for reporting inventory information requested by the UNFCCC reporting guidelines on inventories. Additional tables were provided for this purpose.

19. Although the common reporting format is intended to provide mainly numerical data in electronic form, several tables provide for textual explanations. The relevant cells in the spreadsheets wrap automatically and extend downwards and therefore provide sufficient space to enter the necessary text. This is the case for tables on recalculations, completeness and anticipated future improvements in methodologies. In addition, some tables include documentation boxes for providing further textual information to clarify the content of the tables.

20. The draft common reporting format does not seek to allow the full reconstruction of a GHG inventory, as this would require the submission of an enormous amount of information. It is intended that the common reporting format will facilitate the technical review of inventory information, but that the reconstruction of GHG inventories by expert review teams will require access to all relevant information used in estimating emissions and removals. Parties should also gather and archive this information according to the UNFCCC reporting guidelines on inventories.

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[3] An additional sectoral report provides for the reporting of HFCs, PFCs and SF_6 by chemical species. One further minor change was made to the energy sectoral report by including emissions from multilateral operations as a memo item.

21. The common reporting format, if adopted, would be provided electronically to Parties by the secretariat and would be available on the UNFCCC Web site. Parties would use this format to submit their national inventory data electronically.

C. Content of the common reporting format

22. The draft common reporting format includes the summary, sectoral report and overview tables of the IPCC Guidelines, as well as newly developed tables as shown in the box below. The new tables are discussed in the following paragraphs. The annex to this note contains the draft common reporting format, including a full list of tables, and reporting instructions.

Tables of the common reporting format	
IPCC tables	**New tables**
Summary report tables	CO_2 equivalent emissions summary report table
Sectoral report tables	Sectoral report table for HFCs, PFCs and SF_6 from industrial processes Sectoral background data tables (with activity data and emission factors)
Worksheet 1-1: CO_2 from energy sources (reference approach)	Comparison table for CO_2 emissions from fuel combustion
Overview table[4]	Feedstocks and international bunkers tables
	Recalculations, completeness, anticipated improvements and trend tables.
	[Method/data tables][5]

23. *CO_2 equivalent emissions summary report.* In addition to reporting GHG emissions on a gas-by-gas basis, Parties should report aggregate emissions of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, expressed in CO_2 equivalent terms using the 1995 IPCC global warming potential (GWP) values with a 100-year time horizon. This table also provides information on the relative shares of overall CO_2 equivalent emissions contributed by each gas, source category and sector.[6]

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[4] This table is provided for reporting uncertainties until the ongoing work of the IPCC on this matter is completed and new tables for reporting uncertainties are adopted by the COP.

[5] These tables were included in the version presented at the workshop in Bonn, but are not included in the current version of the note, as explained in paragraph 34.

[6] The table to show the relative shares of the overall CO_2 equivalent emissions contributed by each gas, sector and source/sink category is under modification to take account of removals from land-use change and forestry. The table of relative shares excluding the effects of land-use change and forestry, as presented to the workshop referred to in paragraph 2, is also not included for reasons of consistency. The secretariat intends to provide these tables for consideration by the SBSTA at its tenth session.

24. *Sectoral report for HFCs PFCs and SF_6 from industrial processes*. This table was developed to provide for the disaggregate reporting of emissions of HFCs, PFCs and SF_6 by chemical species, as requested by the UNFCCC reporting guidelines on inventories. The current sectoral report tables for industrial processes do not provide for this disaggregated information. The table requests information on both actual and potential emissions of these gases, as well as on the ratio of potential to actual emissions in the source category related to consumption of halocarbons and SF_6.

25. *Sectoral background data tables*. These tables supplement the sectoral report tables by providing activity data and aggregate emission factors. Key assumptions underlying the emission estimates are also included in these tables. The tables do not generally include the emission estimates themselves, except in cases where the estimates provided by the sectoral report tables are highly aggregated. This breakdown by source or gas is intended to improve transparency and covers fugitive emissions from the energy sector, and emissions from agricultural soils and land-use change and forestry.[7]

26. *Comparison table for CO_2 emissions from fuel combustion*. This table compares estimates of CO_2 emissions from fuel combustion calculated using national methodologies and using the methodology of the reference approach, as requested by the IPCC Guidelines. A documentation box is also provided for Parties to explain in writing any difference greater than 2 per cent between these estimates.

27. *Feedstocks table*. This table provides information on the quantity of carbon stored through the use of feedstocks. The purpose of this table is to allow Parties to report their treatment of feedstocks in a transparent manner.

28. *International bunkers and multilateral operations table*. This table provides activity data and emission factors for international bunker fuel emissions. A box is included for additional information on the bunker fuels used under national and foreign flags. The documentation box supplementing the table requests an explanation of how marine and aviation fuel consumption was separated into national use and international bunkers. There is a row specified for Parties that decide to report aggregated activity data and emission factors for multilateral operations.[8]

29. *Recalculations table*. This table provides information on the magnitude of the changes to emission estimates submitted in previous years as a result of recalculations. The information is

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[7] The *background data table on CO_2 emissions and removals from soil*, in the land-use change and forestry sector, is not included in this version of the draft common reporting format. Further development of this table is required, including consultation with relevant experts and the IPCC Programme. The secretariat intends to provide this table for consideration by the SBSTA at its tenth session.

[8] In accordance with decision 2/CP.3, emissions resulting from multilateral operations pursuant to the Charter of the United Nations shall not be included in national totals, but reported separately; other emissions related to operations shall be included in the national emission totals of one or more Parties involved (FCCC/CP/1997/7/Add.1).

requested in CO_2 equivalent terms by source and gas. The table also provides space for explanations of changes in calculation methods, emission factors and activity data, and of the inclusion of new sources that give rise to the recalculations.

30. *Completeness table*. This table requests a list of sources and sinks requested by the IPCC Guidelines but not included in the submitted inventory, and those sources and sinks allocated to sectors other than those suggested by the IPCC Guidelines. An explanation of the reasons for these deviations from the IPCC Guidelines is also requested. The completeness table also allows Parties to provide information on greenhouse gases with GWP values not yet agreed upon by the COP.

31. *Anticipated future improvements table*. This table requests information on anticipated future improvements, either ongoing or planned, in the methodologies used by Parties and on the expected results of such work.

32. *Trend tables*. These tables facilitate the uniform reporting by all Parties of trends in emissions over time, from the base year and for all subsequent years,[9] by sector and gas. Trend tables go beyond the annual information requested by the common reporting format. However, they could be useful for uniform reporting of the trends across Parties. Such information could also be part of the national inventory reports and the inventory sections in the national communications.

33. *Checklist*. This list provides for an initial checking procedure, to be carried out by Parties, as to whether the common reporting format has been fully completed. It therefore provides an overview of the main elements of the GHG inventories submitted by Parties.

34. Method/data tables were originally provided in the draft common reporting format presented at the workshop referred to in paragraph 2. Following suggestions made by participants at this workshop in relation to national inventory reports, to be published or posted on Web sites, it was decided not to include the method/data tables in this draft of the common reporting format. These tables were intended to provide an indication of the methods used and of the sources of activity data and emission factors. With further development, such tables could serve as a useful summary in national inventory reports, providing concise information on methods/data and references to sections in the detailed reports where additional relevant information may be found.

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[9] In the future, it may only be necessary for the trend tables to include certain years from the base year onwards.

Annex

COMMON REPORTING FORMAT

I. REPORTING INSTRUCTIONS

Note: These are general instructions for all the tables presented in this draft of the common reporting format for submission of inventory information to the Convention by Annex I Parties. Specific reporting instructions for each table will be developed once the final list of tables and their content are defined.

1. All Parties should report their inventory information using the tables of the common reporting format. This information should include activity data and emission factors, in the specified units, as well as other numerical and textual information.

2. Parties should not change the order or notation of the table cells, as this will work against the purposes of the common reporting format by complicating the handling of the data by the secretariat. If additions to the existing category split of sources and sinks are necessary, these should be made using the empty rows (or columns) provided for this purpose. If it is absolutely necessary to make changes to the order or notation of the tables, this should be indicated by changing the colour of the font to red for the changed cells.

3. Notation from the following list should be entered into any cells in data columns into which a Party does not enter data:

NO	Not occurring	Emissions/removals that do not occur in the country
NE	Not estimated	Emissions/removals that do occur but are not estimated
NA	Not applicable	Entry not applicable for this category (such cells are generally shaded in the tables)
IE	Included elsewhere	Emissions/removals estimated but allocated to another source/sink category
C	Confidential	Emissions/removals (or other data) that are confidential
0	Negligible	Emissions/removals which are estimated to be less than one half the unit being used to record the inventory table, and which therefore appear as zero after rounding.

4. All cases in which NE and IE are entered should also be entered and explained in the *completeness table*.

5. Separate columns in some of the *sectoral background data tables* are provided for Parties to specify the type of activity data being supplied for particular source/sink categories (e.g. "clinker produced" or "cement produced").

6. Information should also be entered in *additional information* boxes where these are given.

7. Parties should enter clarifications and additions in the *documentation boxes* below the tables, where these are given, in order to improve the clarity of the tables. Additional pages of text for this purpose may be appended to a table if necessary.

8. *Recalculation table*. Data should be entered into sheet 1 of 2 of this table for any changes in emission estimates between the current inventory submission and the previous inventory submission. These changes should then be documented in sheet 2 of 2 of the *recalculation* table by filling in information for any changes in methods, emission factors, activity data or source/sink categories, as shown in the example below. These cells require textual information. "None" should be entered into cells where there have been no changes in the listed elements of a given recalculated source/sink category.

Example: *Recalculation table (sheet 2 of 2)*[1]

Sector/source where changes have occurred *(enter references from the IPCC Summary Report)*		GHG	Recalculations due to			
			changes in			addition, removal or replacement of a source category
			methods	emission factors	activity data	
		Specify GHG	*Specify and explain changes in methods*	*Specify changes in emission factors (EF)*	*Specify changes in activity data (AD)*	*Specify sources added/removed/replaced*
1A3	Transport	CH_4, N_2O	None	None	None	Railways added
0.04	Fuel combustion	CO_2	None	Revised EFs for natural gas	None	None
1A4a	Residential sector	CO_2	None	None	Revised AD for coal	None
4 A 4 B	Enteric fermentation and manure management	CH_4	Tier 2 adopted for cattle	Revised EFs	Revised AD	None

9. *Completeness table*. This table has three sections. The first section is for information on sources or sinks considered in the IPCC Guidelines which are not included in the submitted inventory. The second section is for information on sources or sinks which are allocated to sectors other than those suggested by the IPCC Guidelines (e.g. allocating emissions from human sewage to agricultural soils rather than waste-water handling). The third section is for information on any emissions of GHGs for which GWP values are not yet agreed upon by the COP.

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[1] The example is oversimplified, providing only a key to the way the table should be filled in. More detailed information is expected to be filled in by Parties when actually reporting.

10. *Anticipated future improvements table.* This table requests textual explanation of any planned improvements in the methodologies and inventory information submitted by Parties. The information should be entered separately for each gas and source/sink category where improvements are expected.

11. *Trend table.* The table follows the structure of the summary report to allow the easy cross-comparison of information. The first sheets of the table require information on trends in emissions and removals on a gas-by-gas basis. The last sheet requires reorganization of the data to indicate trends in the contribution to overall CO_2 equivalent emissions of specific gases and sectors.

12. *Checklist.* The left column of the checklist specifies the question being asked. The other columns require answers to the questions, either by providing textual answers or by clicking the buttons (to answer yes).

13. Parties are also encouraged to report any other relevant information that they consider will improve the transparency of the inventory data or that will communicate to other Parties useful experience gained in the preparation of the inventory submission.

II. LIST OF TABLES

Note: The numbering of the tables used here is provisional until a final common reporting format is defined. The secretariat has decided for the time being to keep the numbering consistent with the IPCC Guidelines.

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TABLE 7.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Sheet 1 of 3)

SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 Emissions	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC	SO_2	HFCs		PFCs		SF_6	
									P	A	P	A	P	A
Total National Emissions and Removals														
1. Energy														
A. Fuel Combustion (Sectoral Approach)														
1. Energy Industries														
2. Manufacturing Industries and Construction														
3. Transport														
4. Other Sectors														
5. Other (please specify)														
B. Fugitive Emissions from Fuels														
1. Solid Fuels														
2. Oil and Natural Gas														
2. Industrial Processes														
A. Mineral Products														
B. Chemical Industry														
C. Metal Production														
D. Other Production														
E. Production of Halocarbons and Sulphur Hexafluoride														
F. Consumption of Halocarbons and Sulphur Hexafluoride														
G. Other (please specify)														

P = Potential emissions based on Tier 1 Approach
A = Actual emissions based on Tier 2 Approach

Common Reporting Format for the provision of inventory information by Annex I Parties to the UNFCCC

TABLE 7.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (Sheet 2 of 3)

SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 Emissions	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC	SO_2	HFCs		PFCs		SF_6	
									P	A	P	A	P	A
3. Solvent and Other Product Use														
4. Agriculture														
A. Enteric Fermentation														
B. Manure Management														
C. Rice Cultivation														
D. Agricultural Soils														
E. Prescribed Burning of Savannas														
F. Field Burning of Agricultural Residues														
G. Other (please specify)														
5. Land-Use Change and Forestry	(1)	(1)												
A. Changes in Forest and Other Woody Biomass Stocks	(1)	(1)												
B. Forest and Grassland Conversion														
C. Abandonment of Managed Lands														
D. CO_2 Emissions and Removals from Soil	(1)	(1)												
E. Other (please specify)														
6. Waste														
A. Solid Waste Disposal on Land														
B. Waste-water Handling														
C. Waste Incineration														
D. Other (please specify)														
7. Other (please specify)														

(1) The formula does not provide a total estimate of both CO_2 emissions and CO_2 removals. It estimates "net" emissions of CO_2 and places a single number in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

TABLE 7.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Sheet 3 of 3)

SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 Emissions	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC	SO_2	HFCs		PFCs		SF_6	
									P	A	P	A	P	A
Memo Items														
International Bunkers														
Aviation														
Marine														
Multilateral Operations														
CO_2 Emissions from Biomass														

TABLE 7.B SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Sheet 1 of 1)

SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2 Emissions	CO_2 Removals	CH_4	N_2O	NO_x	CO	NMVOC	SO_2	HFCs		PFCs		SF_6	
										P	A	P	A	P	A
Total National Emissions and Removals															
1. Energy	Reference Approach[1]														
	Sectoral Approach[1]														
A. Fuel Combustion															
B. Fugitive Emissions from Fuels															
2. Industrial Processes															
3. Solvent and Other Product Use															
4. Agriculture															
5. Land-Use Change and Forestry		[2]													
6. Waste															
7. Other (please specify)															
Memo Items:															
International Bunkers															
Aviation															
Marine															
Multilateral Operations															
CO_2 Emissions from Biomass															

P = Potential emissions based on Tier 1 Approach
A = Actual emissions based on Tier 2 Approach

[1] For verification purposes, countries are asked to report the results of their calculations using the Reference Approach and explain any differences with the Sectoral Approach. The calculations using the Sectoral Approach should be used for calculating national totals. Do not include the results of both the Reference Approach and the Sectoral Approach in national totals.

[2] The formula does not provide a total estimate of both CO_2 emissions and CO_2 removals. It estimates "net" emissions of CO_2 and places a single number in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

TABLE 7.C CO_2 EQUIVALENT EMISSIONS SUMMARY REPORT
(Sheet 1 of 2)

GHG Source and Sink Categories	CO_2 equivalent emissions (Gg)					
	CO_2	CH_4	N_2O	HFC	PFC	SF_6
1. Energy						
A. Fuel Combustion (Sectoral Approach)						
1. Energy Industries						
2. Manufacturing Industries and Construction						
3. Transport						
4. Other Sectors						
5. Other						
B. Fugitive Emissions from Fuels						
1. Solid Fuels						
2. Oil and Natural Gas						
2. Industrial Processes						
A. Mineral Products						
B. Chemical Industry						
C. Metal Production						
D. Other Production						
E. Production of Halocarbons and SF_6						
F. Consumption of Halocarbons and SF_6						
G. Other						
3. Solvent and Other Product Use						
4. Agriculture						
A. Enteric Fermentation						
B. Manure Management						
C. Rice Cultivation						
D. Agricultural Soils						
E. Prescribed Burning of Savannas						
F. Field Burning of Agricultural Residues						
G. Other						
5. Land-Use Change and Forestry						
6. Waste						
A. Solid Waste Disposal on Land						
B. Waste-water Handling						
C. Waste Incineration						
D. Other						
7. Other (please specify)						
TOTAL by gas						
TOTAL CO_2 equivalent emissions						
Memo Items[1]						
International Bunkers						
Aviation						
Marine						
Multilateral Operations						
CO_2 Emissions from Biomass						

[1] *Memo Items are not included in the national totals, and respectively they are not accounted for in the overall CO_2 equivalent emissions.*

GHG Source and Sink Categories	CO_2 equivalent emissions (Gg)					
Land-Use Change and Forestry	CO_2 emissions	CO_2 removals	Net CO_2 emissions /removals	CH_4	N_2O	Total emissions
A. Changes in Forest and Other Woody Biomass Stocks						
B. Forest and Grassland Conversion						
C. Abandonment of Managed Lands						
D. CO_2 Emissions and Removals from Soil						
E. Other (please specify)						

Net CO_2 equivalent emissions from *Land-Use Change and Forestry*	
Total CO_2 equivalent emissions without *Land-Use Change and Forestry*	
Total CO_2 equivalent emissions with *Land-Use Change and Forestry*	
Percent of increase/decrease of the overall CO_2 equivalent emissions with the inclusion of *Land-Use Change and Forestry*	

Common Reporting Format for the provision of inventory information by Annex I Parties to the UNFCCC

TABLE 7.C **CO_2 EQUIVALENT EMISSIONS SUMMARY REPORT**
(Sheet 2 of 2)

Relative shares of the overall CO_2 equivalent emissions contributed by each gas, sector and source/sink category

TO BE PROVIDED LATER (see FCCC/SB/1999/1/Add.1, paragraph 23, footnote 6).

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 1 of 2)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_x	CO	NMVOC	SO_2 [1]
Total Energy							
A. Fuel Combustion Activities (Sectoral Approach)							
1. Energy Industries							
a. Public Electricity and Heat Production							
b. Petroleum Refining							
c. Manufacture of Solid Fuels and Other Energy Industries							
2. Manufacturing Industries and Construction							
a. Iron and Steel							
b. Non-Ferrous Metals							
c. Chemicals							
d. Pulp, Paper and Print							
e. Food Processing, Beverages and Tobacco							
f. Other (please specify)							
3. Transport							
a. Civil Aviation							
b. Road Transportation							
c. Railways							
d. Navigation							
e. Other (please specify)							
Pipeline Transport							

[1] Please provide links from Worksheet 1-4 for each sector where applicable.

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 2 of 2)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
4. Other Sectors							
a. Commercial/Institutional							
b. Residential							
c. Agriculture/Forestry/Fishing							
5. Other (please specify)							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
a. Coal Mining							
b. Solid Fuel Transformation							
c. Other (please specify)							
2. Oil and Natural Gas							
a. Oil							
b. Natural Gas							
c. Venting and Flaring							
Memo Items[1]							
International Bunkers							
Aviation							
Marine							
CO_2 Emissions from Biomass							

[1] Please do not include in energy totals.

TABLE 1.A SECTORAL BACKGROUND DATA FOR ENERGY
Fuel combustion activities - Sectoral approach (Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Consumption (TJ) [1]	AGGREGATE EMISSION FACTORS CO_2 (t/TJ)	CH_4 (kg/TJ)	N_2O (kg/TJ)
1. A. Fuel Combustion				
Coal				
Natural gas				
Oil				
Other fuels[2]				
1. A. 1. Energy Industries				
Coal				
Natural gas				
Oil				
Other fuels				
a. Public Electricity and Heat Production				
Coal				
Natural gas				
Oil				
Other fuels				
b. Petroleum Refining				
Coal				
Natural gas				
Oil				
Other fuels				
c. Manufacture of Solid Fuels and Other Energy Industries				
Coal				
Natural gas				
Oil				
Other fuels				
1. A. 2. Manufacturing Industries and Construction				
Coal				
Natural gas				
Oil				
Other fuels				
a. Iron and Steel				
Coal				
Natural gas				
Oil				
Other fuels				
b. Non-Ferrous Metals				
Coal				
Natural gas				
Oil				
Other fuels				
c. Chemicals				
Coal				
Natural gas				
Oil				
Other fuels				
d. Pulp, Paper and Print				
Coal				
Natural gas				
Oil				
Other fuels				
e. Food Processing, Beverages and Tobacco				
Coal				
Natural gas				
Oil				
Other fuels				

[1] Activity data should be calculated using net calorific values (NCV). Please specify if gross calorific values (GCV) were used in the notes column by filling in "G".

[2] Other fuels includes biomass, municipal and industrial wastes, etc.

TABLE 1.A SECTORAL BACKGROUND DATA FOR ENERGY
Fuel combustion activities - Sectoral approach (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Consumption (TJ) (a)	AGGREGATE EMISSION FACTORS CO_2 (t/TJ)	CH_4 (kg/TJ)	N_2O (kg/TJ)
f. Other (please specify)				
Coal				
Natural gas				
Oil				
Other fuels				
1. A. 3. Transport				
Coal				
Natural gas				
Oil				
Other fuels				
a. Civil Aviation				
Oil				
b. Road Transportation				
Natural gas				
Oil				
Other fuels				
c. Railways				
Coal				
Oil				
d. Navigation				
Coal				
Natural gas				
Oil				
e. Other Transportation				
Coal				
Natural gas				
Oil				
1. A. 4. Other Sectors				
Coal				
Natural gas				
Oil				
Other fuels				
a. Commercial/Institutional				
Coal				
Natural gas				
Oil				
Other fuels				
b. Residential				
Coal				
Natural gas				
Oil				
Biomass				
Other fuels				
c. Agriculture/Forestry/Fishing				
Coal				
Natural gas				
Oil				
Other fuels				
1. A. 5. Other (Not elsewhere specified)				
Coal				
Natural gas				
Oil				
Other fuels				

(a) Activity data should be calculated using net calorific values (NCV). Please specify if gross calorific values (GCV) were used in the notes column by filling in "G".

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive emissions from solid fuels (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	AGGREGATE EMISSION FACTOR		EMISSIONS	
	Amount of fuel produced (Mt)	CH_4 (kg/t)	CO_2 (Gg)	CH_4 (Gg)	CO_2 (Gg)
1. B. 1. a. Coal Mining and Handling					
i Underground Mines					
Mining activities					
Post-Mining activities					
ii Surface Mines					
Mining activities					
Post-Mining activities					
1. B. 1. b. Solid Fuel Transformation					
1. B. 1. c. Other (please specify)[1]					

[1] Use the Other rows to enter any other solid fuel related activities resulting in fugitive emissions.

Additional information

Types of coal mined in the different type of mines (class/rank of coal)	*Percentage of the given production figure*	
	underground	*surface*
Anthracite		
Coking coal		
Other bituminous coal		
Sub-bituminous coal		
Lignite		

Amount of CH_4 recovered (Gg)[a]:	
Mines with recovery systems (number)	

[a] for underground mines

Note: There are no clear references to the coverage of 1B 1b and 1B 1c in the IPCC Guidelines. Make sure that the emissions entered here are not reported elsewhere. If they are reported under another source category give reference in the documentation box.

Documentation box:

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive emissions from oil and natural gas (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		AGGREGATE EMISSION FACTOR		EMISSIONS	
	Units[1]	value	CH_4 (kg/PJ)[2]	CO_2 (kg/PJ)[2]	CH_4 (Gg)	CO_2 (Gg)
1. B. 2. a. Oil						
i. Exploration	*(e.g. number of wells drilled)*					
ii. Production[3]	*(e.g. PJ of oil produced)*					
iii. Transport						
iv. Refining / Storage						
v. Distribution of oil products						
vi. Other						
1. B. 2. b. Natural Gas						
i. Production[3] / Processing						
ii. Transmission						
Distribution						
iii. Other Leakage						
non-residential gas consumed						
residential gas consumed						
1. B. 2. c. Venting and Flaring[4]						
i. Oil						
ii. Gas						
iii. Combined						

Additional information

Unit	*value*
Pipelines length (km)	
Number of oil wells	
Other relevant information	
(specify)	

(1) Specify the activity data used and fill in the activity data unit column, as given in the examples in brackets.
(2) Specify the unit of the emission factor in case it is not kg GHG/ PJ.
(3) If using default emission factors these categories will include emissions from production other than venting and flaring.
(4) If using default emission factors, emissions from venting and flaring from all oil and production should be accounted for here.

TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY
Feedstocks (Sheet 1 of 1)

Fuel type [1]	ACTIVITY DATA		EMISSION FACTOR	ESTIMATES	Additional information	
	Feedstock Quantity (TJ)	Fraction of Carbon Stored	Carbon Emission Factor (t C/TJ)	Carbon Stored (Gg C)	CO_2 not emitted ($Gg\ CO_2$)	Subtracted from (specify source category)
Naphtha[2]						
Lubricants						
Bitumen						
Coal Oils and Tars (from Coking Coal)						
Natural Gas[2]						
Gas/Diesel Oil[2]						
LPG[2]						
Ethane[2]						
Other Fuels[3]						

[1] Enter fuels when they are used as feedstocks. In cases in which fuels are used as feedstocks in different industries, these could be entered in different rows (e.g. coal (steel production), coal (other industries)).
[2] Enter these fuels when they are used as feedstocks.
[3] Use the Other Fuels rows to enter any other feedstocks from which carbon is stored.

Note: The table is consistent with the IPCC Guidelines. Parties that take into account the emissions associated with the use and disposal of these feedstocks could continue to use their methodologies providing explanation in the documentation box below.

Documentation box: To report associated emissions use the above table, also filling an extra "Additional information" table, as shown below:

Associated CO_2 emissions (Gg)	Allocated under *(Specify source category)*[a]

[a] e.g. industrial processes, waste incineration, etc.

TABLE 1.D SECTORAL BACKGROUND DATA FOR ENERGY
International bunkers and multilateral operations (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	AGGREGATE EMISSION FACTORS		
	Consumption	CO_2	CH_4	N_2O
	(TJ)	(t/TJ)	(kg/TJ)	(kg/TJ)
Marine Bunkers				
Gasoline				
Gas/Diesel Oil				
Residual Fuel Oil				
Lubricants				
Sub-bituminous Coal				
Other (specify)				
Aviation Bunkers				
Jet Kerosene				
Gasoline				
Multilateral Operations[1]				

Additional information

Allocation of fuel consumption	*Percentage under*	
	National Flag	*Foreign Flag*
Marine Bunkers		
Aviation Bunkers		

[1] Parties may choose to report or not report the activity data and aggregate emission factors for multilateral operation, consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines on inventories. In any case Parties should report the emissions from multilateral operations under the memo items section of the Summary tables and in the Sectoral Report table for energy.

Note: In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions from fuel sold to ships or aircraft engaged in international transport should be excluded from national totals and reported separately for informational purposes only.

Documentation box: Please explain how the consumption of marine and aviation bunkers fuels was estimated and separated from the domestic consumption.

TABLE 1.E COMPARISON OF CO_2 EMISSIONS FROM FUEL COMBUSTION
(Sheet 1 of 1)

Fuel types	Reference Approach		National Approach[1]		Difference[2]	
	Energy consumption (PJ)	CO_2 emissions (Gg)	Energy consumption (PJ)	CO_2 emissions (Gg)	Energy consumption (%)	CO_2 emissions (%)
Coal (excluding bunkers)						
Oil (excluding bunkers)						
Gas						
Other						
Total						

(1) "National Approach" is used to indicate the approach followed by the Party to estimate its CO_2 emissions from fuel combustion reported in the national GHG inventory.
(2) Difference of the National Approach over the Reference Approach i.e. difference = 100x((NA-RA)/RA), where NA = National Approach and RA = Reference Approach.

Note: In addition to estimating CO_2 emissions from fuel combustion by sector, Parties should also estimate these emissions using the IPCC Reference Approach, as found in volume 2 of the IPCC Guidelines (Worksheet 1-1). The Reference Approach is to assist in verifying the sectoral data. Parties should also complete the above tables to compare the alternative estimates, and if the estimates lie more than 2 percent apart, should explain the source of this difference in the documentation box provided.

Documentation box: Please explain the source of any difference greater than 2 percent.

IPCC WORKSHEET 1-1 **CO_2 FROM ENERGY SOURCES - REFERENCE APPROACH**
(Sheet 1 of 1)

FUEL TYPES			Production	Imports	Exports	International Bunkers	Stock Change	Apparent Consumption	Conversion Factor (TJ/Unit)	Apparent Consumption (TJ)	Carbon Emission Factor (t C/TJ)	Carbon Content (Gg C)	Carbon Stored (Gg C)	Net Carbon Emissions (Gg C)	Fraction of Carbon Oxidized	Actual CO_2 Emissions (Gg CO_2)
Liquid Fossil	Primary Fuels	Crude Oil														
		Orimulsion														
		Natural Gas Liquids														
	Secondary Fuels	Jet Kerosene														
		Other Kerosene														
		Shale Oil														
		Gas / Diesel Oil														
		Residual Fuel Oil														
		LPG														
		Ethane														
		Naphtha														
		Bitumen														
		Lubricants														
		Petroleum Coke														
		Refinery Feedstocks														
		Other Oil														
Liquid Fossil Totals																
Solid Fossil	Primary Fuels	Anthracite[1]														
		Coking Coal														
		Other Bit. Coal														
		Sub-bit. Coal														
		Lignite														
		Oil Shale														
		Peat														
	Secondary Fuels	BKB and Patent Fuel														
		Coke Oven /Gas Coke														
Solid Fuel Totals																
Gaseous Fossil		Natural Gas (Dry)														
Total																
Biomass Total																
		Solid Biomass														
		Liquid Biomass														
		Gas Biomass														

[1] If anthracite is not separately available, include with Other Bituminous Coal.

TABLE 2.(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 1 of 2)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_x	CO	NMVOC	SO_2	HFCs		PFCs		SF_6	
								P	A	P	A	P	A
Total Industrial Processes													
A. Mineral Products													
1. Cement Production													
2. Lime Production													
3. Limestone and Dolomite Use													
4. Soda Ash Production and Use													
5. Asphalt Roofing													
6. Road Paving with Asphalt													
7. Other (please specify)													
Glass Production													
Concrete Pumice Stone													
B. Chemical Industry													
1. Ammonia Production													
2. Nitric Acid Production													
3. Adipic Acid Production													
4. Carbide Production													
5. Other (please specify)													
C. Metal Production													
1. Iron and Steel Production													
2. Ferroalloys Production													
3. Aluminium Production													
4. SF_6 Used in Aluminium and Magnesium Foundries													
5. Other (please specify)													

P = Potential emissions based on Tier 1 Approach.
A = Actual emissions based on Tier 2 Approach. This only applies in sectors where methods exist for both tiers.

TABLE 2.(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 2 of 2)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_x	CO	NMVOC	SO_2	HFCs		PFCs		Sf_6	
								P	A	P	A	P	A
D. Other Production													
1. Pulp and Paper													
2. Food and Drink													
E. Production of Halocarbons and Sulphur Hexafluoride													
1. By-product Emissions													
2. Fugitive Emissions													
3. Other (please specify)													
F. Consumption of Halocarbons and Sulphur Hexafluoride													
1. Refrigeration and Air Conditioning Equipment													
2. Foam Blowing													
3. Fire Extinguishers													
4. Aerosols													
5. Solvents													
6. Other (please specify)													
G. Other (please specify)													

P = Potential emissions based on Tier 1 Approach.
A = Actual emissions based on Tier 2 Approach. This only applies in sectors where methods exist for both tiers.

TABLE 2.(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
CO_2, CH_4 and N_2O emissions (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Production/Consumption Quantity		EMISSION FACTORS					
			CO_2		CH_4		N_2O	
	Unit (1)	(kt)	(t/t)	(2)	(t/t)	(2)	(t/t)	(2)
A. Mineral Products								
1. Cement Production	*(e.g. cement production)*							
2. Lime Production								
3. Limestone and Dolomite Use								
4. Soda Ash Production and Use								
5. Asphalt Roofing								
6. Road Paving with Asphalt								
7. Other (please specify)								
Glass Production								
Concrete Pumice Stone								
B. Chemical Industry								
1. Ammonia Production								
2. Nitric Acid Production								
3. Adipic Acid Production								
4. Carbide Production								
silicon carbide								
calcium carbide								
5. Other (please specify)								
carbon black								
ethylene								
dichloroethylen								
styrene								
methanol								
other (please specify)								
C. Metal Production								
1. Iron and Steel Production								
steel								
pig iron								
sinter								
coke								
2. Ferroalloys Production								
3. Aluminium Production								
5. Other (please specify)								
D. Other Production								
G. Other (please specify)								

(1) In cases when the IPCC Guidelines provide options for activity data, e.g. cement or clinker for estimating the emissions from cement production, specify the activity data used (as shown in the example in brackets) in order to make the choice of emission factor more transparent.

(2) Enter "R" to specify cases in which the final emissions reported in the Sectoral Report tables are reduced with the quantities of emission recovery, oxidation, destruction, transformation. The emissions factors before recovery should be filled in.

Note: In case of confidentiality of the activity data information, the entries should provide aggregate figures but there should be a note indicating this.

TABLE 2.(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
Emissions of HFCs, PFCs and SF_6 (Sheet 1 of 2)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-125	HFC-134a	HFC-143a	HFC-152a	HFC-227ea	Other HFCs			Total HFCs	CF_4	C_2F_6	C_4F_{10}	C_6F_{14}	Other PFCs			Total PFCs	SF_6
C. Metal Production																				
Aluminium Production																				
SF_6 Used in Aluminium Foundries																				
SF_6 Used in Magnesium Foundries																				
E. Production of Halocarbons and SF_6																				
1. By-product Emissions (Specify production)																				
Production of HCFC-22																				
Other																				
2. Fugitive Emissions																				
3. Other (please specify)																				
F. Consumption of Halocarbons and SF_6 (actual emissions)																				
1. Refrigeration and Air Conditioning Equipment																				
2. Foam Blowing																				
3. Fire Extinguishers																				
4. Aerosols/Metered Dose Inhalers																				
5. Solvents																				
6. Other (please specify)																				
Semiconductors																				
Electrical equipment																				
Total																				

TABLE 2.(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
Emissions of HFCs, PFCs and SF_6 (Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-125	HFC-134a	HFC-143a	HFC-152a	HFC-227ea	Other HFCs			Total HFCs	CF_4	C_2F_6	C_3F_{10}	C_6F_{14}	Other PFCs			Total PFCs	SF_6
F. **Consumption of Halocarbons and SF_6 (potential emissions)**																				
production																				
import: in bulk																				
in products[1]																				
export: in bulk																				
in products[1]																				
destroyed amount																				
GWP values used																				
Actual emissions (Gg CO_2 eq.)																				
C. Metal Production																				
E. Production of Halocarbons and SF_6																				
F. Consumption of Halocarbons and SF_6																				
Potential emissions from consumption of halocarbons and SF_6 (Gg CO_2 eq.)																				
Consumption of halocarbons and SF_6 Potential/Actual Emissions Ratio[2]																				

(1) Relevant just for Tier 1b.
(2) This ratio of potential to actual emissions applies only to emissions from the consumption of halocarbons and SF_6. Emissions from metal production and from the production of halocarbons and SF_6 should not be included in this ratio.

Note: As stated in the revised UNFCCC guidelines, Parties should report actual emissions of HFCs, PFCs and SF_6. In addition, Parties reporting those emissions should report disaggregated potential emissions for these substances. Even when Parties report actual emissions, they should also report potential emissions for the relevant sources of these gases, for reasons of transparency and comparability.

TABLE 2.(II).C, E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Metal production; Production of Halocarbons and SF_6 (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA[1]		AGGREGATE EMISSION FACTORS[3]	[4]
	Unit[2]	(t)	(kg/t)	
C. PFC and SF_6 from metal production				
PFC (Total)				
CF_4				
C_2F_6				
SF_6				
Aluminium foundries	*(SF_6 consumption)*			
Magnesium foundries				
E. Production of Halocarbons and SF_6				
1. By-product emissions				
Production of HCFC-22				
(please specify species)				
Other				
(please specify species)				
2. Fugitive emissions				
HFC (please specify species)				
PFC (please specify species)				
SF_6				
3. Other				

(1) In case of application of a Tier 1b (for C), Tier 2 (for E) and country specific methods, specify any other relevant activity data used in the documentation box below.
(2) Specify the activity data used as shown in the examples within brackets.
(3) Aggregate emission factors before recovery.
(4) Enter "R" to specify cases in which the final emissions reported in the Sectoral Report table are reported after substracting the quantities of emission recovery, oxidation, destruction, transformation. Use the documentation box for further explanations.

Documentation box:

TABLE 2.(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6 (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA *Amount of fluid*			AGGREGATE EMISSION FACTORS		
	filled in new manufactured products	in operating systems (average annual stocks)	remaining products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor
	(t)			(%)		
1. Refrigeration						
Air Conditioning Equipment						
Domestic						
(please specify species)						
Other stationary						
(please specify species)						
Mobile						
(please specify species)						
2. Foam Blowing						
Hard foam						
(please specify species)						
Soft foam						
(please specify species)						
3. Fire Extinguishers						
(please specify species)						
4. Aerosols						
Metered Dose Inhalers						
(please specify species)						
Other						
(please specify species)						
5. Solvents						
(please specify species)						
6. Semiconductors						
(please specify species)						
7. Electric equipment						
(please specify species)						
8. Other (please specify)						

Note: In case of confidentiality of the activity data information, the entries should provide aggregate figures, but there should be a note indicating this.

Documentation box:

TABLE 3 SECTORAL REPORT FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	N_2O	NMVOC
Total Solvent and Other Product Use			
A. Paint Application			
B. Degreasing and Dry Cleaning			
C. Chemical Products, Manufacture and Processing			
D. Other (please specify)			

Please account for the quantity of carbon released in the form of NMVOC in both the NMVOC and the CO_2 columns.

Note: The IPCC Guidelines do not provide methodologies for the calculation of emissions of N_2O from solvent and other product use. If you have reported such data, you should provide additional information (activity data and emission factors) used to make these estimates.

TABLE 3.A-D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		AGGREGATE EMISSION FACTORS		
	Unit	(kt)	CO_2 (kg/t)	CH_4 (kg/t)	N_2O (kg/t)
A. Paint Application					
B. Degreasing and Dry Cleaning					
C. Chemical Products, Manufacture and Processing					
D. Other (please specify)[1]					
(Use of N_2O for anaesthesia)					
(N_2O from fire extinguishers)					
(N_2O from aerosol cans)					
(Other use of N_2O)					

[1] Some probable sources are provided in brackets. Complement the list with other relevant sources.

Note: The table follows the format of the IPCC Sectoral Report for Solvent and Other Product Use, although some of the source categories are not relevant to the direct GHG emissions.

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
Total Agriculture					
A. Enteric Fermentation					
1. Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other (please specify)					
B. Manure Management					
1. Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
B. Manure Management (continued)					
10. Anaerobic Lagoons					
11. Liquid Systems					
12. Solid Storage and Dry Lot					
13. Other (please specify)					
C. Rice Cultivation					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other (please specify)					
D. Agricultural Soils					
E. Prescribed Burning of Savannas					
F. Field Burning of Agricultural Residues[1]					
1. Cereals					
2. Pulse					
3. Tuber and Root					
4. Sugar Cane					
5. Other (please specify)					
G. Other (please specify)					

[1] Sub-items of F should be linked to Worksheet 4-4 sheets 1 and 2.

Note: The IPCC Guidelines do not provide methodologies for the calculation of CH_4 emissions, CH_4 and N_2O removals from agricultural soils, or CO_2 emissions from savanna burning or agricultural residues burning. If you have reported such data, you should provide additional information (activity data and emissions factors) used to make these estimates.

TABLE 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE
Enteric fermentation (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			AGGREGATE EMISSION FACTORS
	Population size[1] (1000 head)	Average daily feed intake (MJ/day)	CH_4 conversion (%)	CH_4 (kg CH_4/head/yr)
1. Cattle				
Dairy Cows				
Non-dairy Cattle				
2. Buffalo				
3. Sheep				
4. Goats				
5. Camels and Llamas				
7. Mules and Asses				
9. Poultry				
10. Other (please specify)				

Additional Information

Disaggregated list of animals[a] *Indicators:*		Dairy Cow	Non-Diary Cattle	Other		
Weight	*(kg)*					
Weight Gain	*(kg/day)*					
Feeding Situation						
Milk	*(kg/day)*					
Work	*(hrs/day)*					
Pregnant	*(%)*					
Digestibility of feed	*(%)*					
Day Weighted Population Mix	*(%)*					

[a] Disaggregate to the split actually used. Add colums to the table if necessary.

[1] Parties are encouraged to provide detailed livestock population data by animal type and region in a separate table. This consistent set of animal population statistics should be used to estimate CH_4 emissions from enteric fermentation, CH_4 and N_2O from manure management, N_2O direct emissions from soil and N_2O emissions associated with manure production, as well as for emissions from the use of manure as fuel, and sewage-related emissions reported in the waste sector.

TABLE 4.B.(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE
CH_4 emissions from manure management (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA							AGGREGATE EMISSION FACTORS
	Population size[1]	Allocation by climate region			Typical Animal mass	VS[2] daily excretion	CH_4 producing potential (B_0)	CH_4
		cool	temperate	warm				
	(1000 head)	(%)			(kg)	(kg dm/head/yr)	(CH_4 m^3/kg VS)	(kg CH_4/head/yr)
1. Cattle								
Dairy Cows								
Non-dairy Cattle								
2. Buffalo								
3. Sheep								
4. Goats								
5. Camels and Llamas								
6. Horses								
7. Mules and Asses								
8. Swine								
9. Poultry								

[1] See footnote 1, Sectoral background data table 4.A
[2] Volatile Solids.

Additional Information for Tier 2

Animal[a]			Animal Waste Management System					
			anaerobic lagoons	liquid system	daily spread	solid storage and dry lot	pasture range paddock	other
Dairy cows	Allocation (%)	cool						
		temperate						
		warm						
	MCF[b]	cool						
		temperate						
		warm						
Non-Diary Cattle	Allocation (%)	cool						
		temperate						
		warm						
	MCF[b]	cool						
		temperate						
		warm						
Swine	Allocation (%)	cool						
		temperate						
		warm						
	MCF[b]	cool						
		temperate						
		warm						

[a] Copy the above table as many times as necessary.
[b] Methane Conversion Factor.

TABLE 4.B.(b) SECTORAL BACKGROUND DATA FOR AGRICULTURE
N_2O emissions from manure management (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA								AGGREGATE EMISSION FACTORS	
	Animals[1]	Nitrogen excretion	N excretion per AWMS[2] (kg N/yr)						Emission factor per AWMS	
	(1000s)	(kg N/head/yr)	anaerobic lagoon	liquid system	daily spread[3]	solid storage and dry lot	pasture range and paddock[3]	other	(kg N_2O-N/kg N)	
Non-diary Cattle									anaerobic lagoon	
Diary Cattle									liquid system	
Sheep									solid storage and dry lot	
Swine									other (please specify)	
Poultry										
Other (please specify)										
Total per AWMS										

(1) See footnote 1 for table 4.A
(2) Animal Waste Management System
(3) To be used in Sectoral Background Data Table 4.D

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE
Rice cultivation (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA			AGGREGATE EMISSION FACTOR[2]
		Harvested area[1] (m^2/yr)	Organic amendments added: type	t/ha	CH_4 (g/m^2)
1. Irrigated					
Continuously flooded					
Intermittently flooded	Single Aeration				
	Multiple Aeration				
2. Rainfed					
Flood prone					
Drought prone					
3. Deep Water					
Water depth 50-100 cm					
Water depth > 100 cm					
4. Other (please specify)					
Upland rice[3]					
Total[3]					

(1) Harvested area is the cultivated area multiplied by the number of cropping seasons per year.
(2) The aggregate emission should take account of all relevant corrections for continuously flooded fields without organic amendment plus the correction for the organic amendments, if used. Aggregate also the effect of different soil characteristics, if taken into account, on methane emissions.
(3) These rows are included to allow comparison with the international statistics. Upland rice emissions are assumed to be zero and are ignored in the emission calculations.

1ha = 10 000 m^2

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE
Agricultural soil (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		EMISSION FACTORS	EMISSIONS
	unit	(kg N/yr)[1]	(kg N_2O-N/kg N)[2]	(Gg N_2O)[3]
Direct Soil Emissions				
Synthetic Fertilizers	*Use of synthetic fertilizers*			
Animal Wastes	*Manure from daily spread*[4]			
N-fixing Crops	*Dry pulses and soybeans produced*[5]			
Crop residue	*Dry production of other crops*[5]			
Cultivation of Histosols	*Area of cultivated organic soils*[2]			
Animal Production	*N excretion on pasture range and paddock*			
Indirect Emissions				
Atmospheric Deposition	*Volatized N (NH_3 and NOx) from fertilizers and animal wastes*			
Nitrogen leaching and Run-off	*N from fertilizers and animal wastes that is lost through leaching and run-off*			
Other (please specify)				

Fraction	Description	Value
$Frac_{BURN}$	Fraction of crop residue burned	
$Frac_{FUEL}$	Fraction of livestock N excretion in excrements burned for fuel	
$Frac_{GASF}$	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH_3 and NOx	
$Frac_{GASM}$	Fraction of livestock N excretion that volatilizes as NH_3 and NOx	
$Frac_{GRAZ}$	Fraction of livestock N excreted and deposited onto soil during grazing	
$Frac_{LEACH}$	Fraction of N input to soils that is lost through leaching and run-off	
$Frac_{NCRBF}$	Fraction of N in non-N-fixing crop	
$Frac_{NCRO}$	Fraction of N in N-fixing crop	
$Frac_R$	Fraction or crop residue removed from the field as crop	

[1] Note that the activity data for N-fixing crops and crop residue are expressed in [kg dry biomass/yr] and for cultivation of histosols in [ha].
[2] Note that the dimension of the activity data for cultivation of histosols is [kg N2O-N/ha].
[3] To convert from N_2O-N to N_2O emissions, multiply by 44/28.
[4] Take the value from the Sectoral background data table 4.B.(b).
[5] Take the value from the Sectoral background data table 4.F.

TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE
Prescribed burning of savanna (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA					AGGREGATE EMISSION FACTORS (kg/t dm)	
(specify ecological zone)	Area of Savanna Burned (k ha/yr)	Average aboveground biomass density (t dm/ha)	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass	CH_4	N_2O

Additional information

	Living	*Dead*
Fraction of aboveground biomass		
Fraction oxidized		
Carbon fraction		

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE
Field burning of agricultural residue (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA					EMISSION FACTORS	
	Crop production (t)	Residue/ Crop ratio	Dry matter fraction	Fraction burned	Nitrogen fraction in biomass	CH_4 (kg/t dm)	N_2O (kg/t dm)
1. Cereals							
Wheat							
Barley							
Maize							
Oats							
Rye							
Rice							
Other (please specify)							
2. Pulse[1]							
Dry bean							
Peas							
Soybeans							
Other (please specify)							
3. Tuber and Root							
Potatoes							
Other (please specify)							
4. Sugar Cane							
5. Other (please specify)							

[1] To be used in Sectoral Background Data Table 4 D: Agricultural Soil.

TABLE 5 SECTORAL REPORT FOR LAND-USE CHANGE AND FORESTRY
(Sheet 1 of 1)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 Emissions	CO_2 Removals	CH_4	N_2O	NO_x	CO
Total Land-Use Change and Forestry	(1)	(1)				
A. Changes in Forest and Other Woody Biomass Stocks	(1)	(1)				
1. Tropical Forests						
2. Temperate Forests						
3. Boreal Forests						
4. Grasslands/Tundra						
5. Other (please specify)						
B. Forest and Grassland Conversion						
1. Tropical Forests						
2. Temperate Forests						
3. Boreal Forests						
4. Grasslands/Tundra						
5. Other (please specify)						
C. Abandonment of Managed Lands						
1. Tropical Forests						
2. Temperate Forests						
3. Boreal Forests						
4. Grasslands/Tundra						
5. Other (please specify)						
D. CO_2 Emissions and Removals from Soil	(1)	(1)				
E. Other (please specify)						

(1) The formula does not provide a total estimate of both CO_2 emissions and CO_2 removals. It estimates "net" emissions of CO_2 and places a single number in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for removals are always (-) and for emissions (+).

Common Reporting Format for the provision of inventory information by Annex I Parties to the UNFCCC

TABLE 5.A SECTORAL BACKGROUND DATA TABLE FOR LAND-USE CHANGE AND FORESTRY[1]
Changes in forest and other woody biomass stocks (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			ACTIVITY DATA		EMISSION FACTORS	ESTIMATES[2]
			Area of Forest/Biomass Stocks (kha)	Annual Growth Rate (t dm/ha)	Carbon Uptake Factor (t C/ha)	Carbon Uptake Increment (Gg C)
Tropical	Plantations	*Acacia spp.*				
		Eucalyptus spp.				
		Tectona grandis				
		Pinus spp.				
		Pinus caribaea				
		Mixed Hardwoods				
		Mixed Fast-Growing Hardwoods				
		Mixed Softwoods				
	Other Forests	Moist				
		Seasonal				
		Dry				
	Other (specify)					
Temperate	Plantations	Douglas fir				
		Loblolly pine				
	Commercial	Evergreen				
		Deciduous				
	Other					
Boreal						

Non-Forest Trees (specify type)	Number of trees (1000s of trees)	Annual Growth Rate (kt dm/1000 trees)	Carbon Uptake Factor (t C/tree)	Carbon Uptake Increment (Gg C)
Total Annual Growth Increment				
Gg CO_2				

	Amount of Biomass Removed (kt dm)	Carbon Emission Factor (t C/t dm)	Carbon Emission /Removal Estimate (Gg C)
Total biomass removed in Commercial Harvest			
Traditional Fuelwood Consumed			
Total Other Wood Use			
Total Annual Fellings (incl. Harvest)			
Gg CO_2			
Net Annual Carbon Uptake (+) or Release (-) (Gg C)			
Net Annual CO_2 Emissions (+) or Removals (-) (Gg CO_2)			

(1) The methodological work on estimating and reporting emissions by sources and removals by sinks from the land-use change and forestry sector is still in progress. After the completion of work by the IPCC and the adoption of decisions by the COP, the tables in the common reporting format dealing with this sector might be changed accordingly.

(2) Emission estimates are included in the table since the Sectoral Report Tables provides higher level of aggregation.

TABLE 5.B SECTORAL BACKGROUND DATA TABLE FOR LAND-USE CHANGE AND FORESTRY
Forest and grassland conversion (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA							AGGREGATE EMISSION FACTORS					EMISSION ESTIMATES[1]				
		On and off site burning				Decay of Above-ground Biomass			Burning				Decay	Burning				Decay
									on site			off site		on site			off site	
Vegetation types		Area Converted Annually	Annual Loss of Biomass	Quantity of Biomass Burned		Average Area Converted (10 Year Average)	Average Loss of Biomass	Average Quantity of Biomass Left to Decay	CO_2	CH_4	N_2O	CO_2	CO_2	CO_2	CH_4	N_2O	CO_2	CO_2
				on Site	off Site													
		(kha)	(kt dm)	(kt dm)	(kt dm)	(kha)	(t dm/ha)	(kt dm)	(Gg/ha)					(Gg)				
Tropical	Wet/Very Moist																	
	Moist, short dry season																	
	Moist, long dry season																	
	Dry																	
	Montane Moist																	
	Montane Dry																	
Tropical Savanna/Grasslands																		
Temperate	Coniferous																	
	Broadleaf																	
Grasslands																		
Boreal	Mixed Broadleaf/ Coniferous																	
	Coniferous																	
	Forest																	
Grasslands/Tundra																		
Other																		

[1] Emission estimates are included in the table since the Sectoral Report Tables provides higher level of aggregation.

Additional information

Emissions/Removals (Gg)	on site	off site	*Fractions*	on site	off site
Immediate Carbon Release from Burning			Fraction of biomass burned		
Total			Fraction which oxidizes during burning		
Delayed Emissions from Decay			Carbon fraction of aboveground biomass		
Total Annual Carbon Release			Fraction left to decay		
CO_2 emissions			Nitrogen-Carbon Ration		

TABLE 5.C SECTORAL BACKGROUND DATA TABLE FOR LAND-USE CHANGE AND FORESTRY
Abandonment of managed lands (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA						EMISSION FACTORS	ESTIMATES	
		Total Area Abandoned		Annual Rate of Aboveground Biomass Growth		Carbon Fraction of Aboveground Biomass		Rate of Aboveground Biomass Carbon Uptake	Annual Carbon Uptake in Aboveground Biomass	
Vegetation types		first 20 years (kha)	>20 years (kha)	first 20 years (t dm/ha)	>20 years (t dm/ha)	first 20 years	>20 years	(t C/ha/yr)	first 20 years (Gg C/yr)	>20 years (Gg C/yr)
Tropical	Wet/Very Moist									
	Moist, short dry season									
	Moist, long dry season									
	Dry									
	Montane Moist									
	Montane Dry									
Tropical Savanna/Grasslands										
Temperate	Coniferous									
	Broadleaf									
Grasslands										
Boreal	Mixed Broadleaf/Coniferous									
	Coniferous									
	Forest									
Grasslands/Tundra										
Other										
								Total CO_2 Uptake		

TABLE 5.D SECTORAL BACKGROUND DATA TABLE FOR LAND-USE CHANGE AND FORESTRY
CO_2 emissions and removals from soil (Sheet 1 of 1)

TO BE PROVIDED LATER (see FCCC/SB/1999/1/Add.1, paragraph 25, footnote 7).

TABLE 6 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

SECTORAL REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Gg)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	NO_x	CO	NMVOC
Total Waste						
A. Solid Waste Disposal on Land						
1. Managed Waste Disposal on Land						
2. Unmanaged Waste Disposal Sites						
3. Other (please specify)						
B. Waste-water Handling						
1. Industrial Waste water						
2. Domestic and Commercial Waste water						
3. Other (please specify)						
C. Waste Incineration						
D. Other (please specify)						

[1] Note that CO_2 from waste disposal and incineration should only be included if it stems from non-biological or inorganic waste sources.

TABLE 6.A SECTORAL BACKGROUND DATA FOR WASTE
Solid waste disposal (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			AGGREGATE EMISSION FACTOR	
	Annual MSW at the SWDS (t)	MCF	DOC degraded (t)	CH_4[1] (t /t MSW)	CO_2 (t /t MSW)
1. Managed Waste Disposal on Land					
2. Unmanaged Waste Disposal Sites <5 m[2]					
>5 m[2]					
3. Other (please specify)					

Additional information

Population (1000 inhabitants[a]):	
Waste generation rate (kg/capita/day):	
Fraction of MSW disposed to SWDS (%):	
Fraction of DOC in MSW:	
Fraction of wastes incinerated:	
CH_4 fraction in landfill gas:	
CH_4 recovered (Gg/yr):	
Time lag considered (yr):	
Composition of landfilled waste (%):	
Paper and paperboard	
Food and garden waste	
Plastics	
Glass	
Textiles	
Other (specify)	

[a] Specify whether total or urban population is used and the rationale for doing so.

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE
Waste Incineration (Sheet 1 of 1)

	ACTIVITY DATA	AGGREGATE EMISSION FACTOR			
	Amount of incinerated wastes (t)	CO_2[3] (g / t waste)	CO_2[4] (g / t waste)	CH_4 (g / t waste)	N_2O (g / t waste)
Specify					
(biogenic)[3]					
(plastics)[4]					
other					

(1) Before recovery
(2) "<5 m" and ">5 m" are used to indicate shallow and deep unmanaged waste disposal sites.
(3) CO_2 emissions from biogenic wastes are not included in the totals.
(4) CO_2 emissions from non-biogenic wastes are included in the totals.

MSW - Municipal Solid Waste
SWDS - Solid Waste Disposal Site
MCF - Methane Correction Factor
DOC - Degradable Organic Carbon

TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE
Waste-water handling (Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA[1]			AGGREGATE EMISSION FACTOR		
	Total organic product		CH_4 recovered and/or flared	CH_4[2]		N_2O
	Waste-water	sludge		Waste-water	sludge	
	(kg DC[1]/yr)		(Gg)	(kg/kg DC)	(kg/kg DC)	(kg/kg DC)
Industrial Waste-water						
Domestic and Commercial Waste-water						
Other (please specify)						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		AGGREGATE EMISSION FACTOR
	Protein consumption	N fraction	N_2O
	(protein in kg/person/yr)	(kg N/kg protein)	(kg N_2O-N/kg sewage N produced)
N_2O from human sewage			

[1] DC - degradable organic component. DC indicators are COD (Chemical Oxygen Demand) for industrial waste-water and BOD (Biochemical Oxygen Demand) for Domestic/Commercial waste-water/sludge.
[2] before recovery.

Additional information

Population (1000 persons)[a]:	
Total Waste-water (m^3):	
Treated Waste-water (%):	

Waste-water streams	Waste-water output (m^3)	DC ($kgCOD/m^3$)
Industrial waste-water		
iron and steel		
non-ferrous		
fertilizers		
food and beverage		
paper and pulp		
organic chemicals		
other		
	DC (kg BOD/1000 person/yr)	
Domestic		
Other		

Handling systems	Industrial waste-water treated (%)	Ind. sludge treated (%)	Domestic waste-water treated (%)	Domestic sludge treated (%)
aerobic				
anaerobic				
other (specify)				

[a] Specify whether total or urban population is used and the rationale for doing so. Provide both figures.

TABLE 8.A OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Sheet 1 of 3)

OVERVIEW TABLE

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		NO_x		CO		NMVOC		SO_2		HFCs		PFCs		SF_6		Documentation	Disaggregation	Footnotes
	E[1]	Q[2]	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q			
Total National Emissions and Removals																							
Energy																							
A. Fuel Combustion Activities																							
Reference Approach																							
Sectoral Approach																							
1. Energy Industries																							
2. Manufacturing Industries and Construction																							
3. Transport																							
4. Other Sectors																							
5. Other (please specify)																							
B. Fugitive Emissions from Fuels																							
1. Solid Fuels																							
2. Oil and Natural Gas																							
Industrial Processes																							
A. Mineral Products																							
B. Chemical Industry																							
C. Metal Production																							
D. Other Production																							
E. Production of Halocarbons and Sulphur Hexafluoride																							

[1] E denotes Estimate;
[2] Q denotes Quality.

TABLE 8.A OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	OVERVIEW TABLE																							
	CO_2		CH_4		N_2O		NO_x		CO		NMVOC		SO_2		HFCs		PFCs		SF_6		Documentation	Disaggregation	Footnotes
	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q			
Industrial Processes (continued)																							
F. Consumption of Halocarbons and Sulphur Hexafluoride																							
Potential [1]																							
Actual [2]																							
G. Other (please specify)																							
3. Solvent and Other Product Use																							
4. Agriculture																							
A. Enteric Fermentation																							
B. Manure Management																							
C. Rice Cultivation																							
D. Agricultural Soils																							
E. Prescribed Burning of Savannas																							
F. Field Burning of Agricultural Residues																							
G. Other (please specify)																							
5. Land-Use Change and Forestry																							
A. Changes in Forest and Other Woody Biomass Stocks																							
B. Forest and Grassland Conversion																							

[1] Potential emissions based on Tier 1 Approach.
[2] Actual emissions based on Tier 2 Approach.

TABLE 8.A OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES
(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	OVERVIEW TABLE																				Documentation	Disaggregation	Footnotes
	CO_2		CH_4		N_2O		NO_x		CO		NMVOC		SO_2		HFCs		PFCs		SF_6				
	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q	E	Q			
5. Land-Use Change and Forestry (continued)																							
A. Abandonment of Managed Lands																							
D. CO_2 Emissions and Removals from Soil																							
Other (please specify)																							
6. Waste																							
A. Solid Waste Disposal on Land																							
B. Waste-water Handling																							
B. Waste Incineration																							
C. Other (please specify)																							
7. Other (please specify)																							
Memo Items:																							
International Bunkers																							
Aviation																							
Marine																							
Multilateral Operations																							
CO_2 Emissions from Biomass																							

TABLE 9 RECALCULATION
(Sheet 1 of 3)

Year:

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2			CH_4			N_2O		
	previous submission	latest submission	difference[1]	previous submission	latest submission	difference[1]	previous submission	latest submission	difference[1]
	(Gg CO_2 eq.)		(%)	(Gg CO_2 eq.)		(%)	(Gg CO_2 eq.)		(%)
1. Energy									
1.A Fuel Combustion Activities									
1.A.1 Energy Industries									
1.A.2 Manufacturing Industries and Construction									
1.A.3 Transport									
1.A.4 Other Sectors									
1.A.5 Other									
1.B Fugitive Emissions from Fuels									
1.B.1 Solid fuel									
1.B.2 Oil and Natural Gas									
2. Industrial Processes									
2.A Mineral Products									
2.B Chemical Industry									
2.C Metal Production									
2.D Other Production									
2.G Other									
3. Solvent and Other Product Use									
4. Agriculture									
4.A Enteric Fermentation									
4.B Manure Management									
4.C Rice Cultivation									
4.D Agricultural Soils									
4.E Prescribed Burning of Savannas									
4.F Field Burning of Agricultural Residues									
4.G Other									
5. Land-Use Change and Forestry (net)									
5.A Changes in Forest and Other Woody Biomass Stocks									
5.B Forest and Grassland Conversion									
5.C Abandonment of Managed Lands									
5.D CO_2 Emissions and Removals from Soil									
5.E Other (please specify)									

[1] Estimate the change due to recalculation with respect to the previous submission (previous submission = 100%).

TABLE 9 RECALCULATION
(Sheet 2 of 3)

Year:

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2			CH_4			N_2O		
	previous submission	latest submission	difference[1]	previous submission	latest submission	difference[1]	previous submission	latest submission	difference[1]
	(Gg CO_2 eq.)		(%)	(Gg CO_2 eq.)		(%)	(Gg CO_2 eq.)		(%)
6. Waste									
6.A Solid Waste Disposal on Land									
6.B Waste-water Handling									
6.C Waste Incineration									
6.D Other									
7. Other									
TOTALS									
Memo Items									
International Bunkers									
Multilateral Operations									
CO_2 Emissions from Biomass									

Actual emissions of	HFCs			PFCs			SF_6		
	previous submission	latest submission	difference[1]	previous submission	latest submission	difference[1]	previous submission	latest submission	difference[1]
	(Gg CO_2 eq.)		(%)	(Gg CO_2 eq.)		(%)	(Gg CO_2 eq.)		(%)
2.C Aluminium production									
2.E Production of HFCs/PFCs and SF_6									
2.F Consumption of HFCs/PFCs and SF_6									
Total actual emissions									

	Previous submission	Latest submission	Change
	(Gg CO_2 eq.)		(%)
OVERALL CO_2 EQUIVALENT EMISSIONS[2]			

[1] Estimate the change due to recalculation with respect to the previous submission (previous submission = 100%).
[2] For the purposes of this table, the *Land-use change and forestry* sector has been omitted in the estimates of the overall CO_2 equivalent emissions.

TABLE 9 RECALCULATION
(Sheet 3 of 3)

Year:

Specify the sector and source/sink category[1] where changes in estimates have occurred:		GHG	RECALCULATION DUE TO CHANGES IN:			Addition/removal/ replacement of source/sink categories
			Methods[2]	Emission factors[2]	Activity data[2]	

[1] Enter the identification code of the source/sink category (e.g. 1B1) in the first column and the name of the category (e.g. fugitive emissions from solid fuels) in the second column of the table.
[2] Explain changes in methods, emission factors and activity data that have resulted in recalculation of the estimate of the source/sink. Include relevant changes in the assumptions and coefficients under the "method" column.

Documentation box: Use the documentation box to report the justification of the changes as improvements in the accuracy, completeness and consistency of the inventory.

TABLE 10 COMPLETENESS
(Sheet 1 of 2)

Sources and sinks not reported (with respect to the IPCC Guidelines) (NE)[1]				
GHG	**Sector**[2]	**Source/sink category**[2]	**Explanation**	
CO_2				
CH_4				
N_2O				
HFCs				
PFCs				
SF_6				

Sources and sinks reported elsewhere (with respect to the IPCC Guidelines) (IE)[3]				
GHG	**Source/sink category**	**Allocation as per IPCC Guidelines**	**Allocation used by the Party**	**Explanation**

(1) Please clearly indicate sources and sinks which are considered in the IPCC Guidelines but are not considered in the submitted inventory. Explain the reason for excluding these sources and sinks, in order to avoid arbitrary interpretations. An entry should be made for each source/sink category for which the indicator "NE" is entered in the sectoral tables.

(2) Indicate omitted source/sink following the IPCC source/sink category structure (e.g. sector: waste, source: waste-water handling)

(3) Please clearly indicate sources and sinks in the submitted inventory that are allocated to a sector other than that indicated by the IPCC Guidelines. Show the sector indicated in the IPCC Guidelines and the sector to which the source or sink is allocated in the submitted inventory. Explain the reason for reporting these sources and sinks in a different sector. An entry should be made for each source/sink for which the indicator "IE" is used in the sectoral tables.

TABLE 10 COMPLETENESS
(Sheet 2 of 2)

Additional GHG emissions reported (with respect to the IPCC Guidelines)[1]

GHG	Source category	Emissions (Gg)	Estimated GWP value (100-year horizon)	Emissions (Gg CO_2 eq.)	Explanation[2]

[1] Parties are encouraged to provide information on emissions of greenhouse gases with GWP not yet agreed upon by the COP. Please include such gases in this table if they are considered in the submitted inventory.

[2] Please provide additional information on the estimation methods used and reference to the data source of GWP value.

TABLE 11 ANTICIPATED FUTURE IMPROVEMENTS IN METHODOLOGIES
(Sheet 1 of 1)

GHG	Sector	Source/sink category	On-going or planned projects relevant to inventory data and methods	Expected results to help improving the inventory quality and reducing the associated uncert: inties
CO_2				
CH_4				
N_2O				
HFCs				
PFCs				
SF_6				

TABLE 12 EMISSIONS TRENDS (CO_2)
(Sheet 1 of 5)

GHG Source and Sink Categories	Emissions (Gg)									
	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF_6										
F. Consumption of Halocarbons and SF_6										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry[2]										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO_2 Emissions and Removals from Soil										
E. Other (please specify)										
6. Waste										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other (please specify)										
TOTAL										
Memo Items:										
International Bunkers										
Aviation										
Marine										
Multilateral Operations										
CO_2 Emissions from Biomass										

(1) Specify the base year adopted by the Party under the Convention.
(2) Net emissions.

TABLE 12 EMISSIONS TRENDS (CH_4)
(Sheet 2 of 5)

GHG Source and Sink Categories	Emissions (Gg)									
	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF_6										
F. Consumption of Halocarbons and SF_6										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry[2]										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO_2 Emissions and Removals from Soil										
E. Other (please specify)										
6. Waste										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other (please specify)										
TOTAL										
Memo Items:										
International Bunkers										
Aviation										
Marine										
Multilateral Operations										
CO_2 Emissions from Biomass										

(1) Specify the base year adopted by the Party under the Convention.
(2) Net emissions.

TABLE 12 EMISSIONS TRENDS (N_2O)
(Sheet 3 of 5)

GHG Source and Sink Categories	Emissions (Gg)									
	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF_6										
F. Consumption of Halocarbons and SF_6										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry[2]										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO_2 Emissions and Removals from Soil										
E. Other (please specify)										
6. Waste										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other (please specify)										
TOTAL										
Memo Items:										
International Bunkers										
Aviation										
Marine										
Multilateral Operations										
CO_2 Emissions from Biomass										

(1) Specify the base year adopted by the Party under the Convention.
(2) Net emissions.

TABLE 12 EMISSIONS TRENDS (HFC, PFC and SF_6)
(Sheet 4 of 5)

GHG Source and Sink Categories	Emissions (Gg)									
	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
Emissions of HFCs [2]										
(Specify species)										
Emissions of PFCs[2]										
Emissions of SF_6[2]										

[1] Specify the base year adopted by the Party under the Convention.
[2] Enter information on actual emissions. In cases in which estimates are only available for potential emissions, specify this in a footnote.

TABLE 12 EMISSION TRENDS (SUMMARY)
(Sheet 5 of 5)

GHG emissions	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
Emissions (Gg CO_2 equivalent)										
CO_2										
CH_4										
N_2O										
HFC										
PFC										
SF_6										
Totals										
Index (1990=100%)										
Share of in the overall CO_2 eq. emissions (%)										
CO_2										
CH_4										
N_2O										
HFC										
PFC										
SF_6										

GHG emission sources	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
Emissions (Gg CO_2 equivalent)										
1. Energy										
2. Industrial Processes										
3. Solvent and Other Product Use										
4. Agriculture										
5. Land-Use Change and Forestry[2]										
6. Waste										
7. Other										
Totals										
Index (1990=100%)										
Share of in the overall CO_2 eq. emissions (%)										
1. Energy										
2. Industrial Processes										
3. Solvent and Other Product Use										
4. Agriculture										
5. Land-Use Change and Forestry[2]										
6. Waste										
7. Other										

(1) Specify the base year adopted by the Party under the Convention.
(2) Net emissions.

TABLE 13 CHECK-LIST of REPORTED INVENTORY INFORMATION

Party: **Year:**

Contact info	Focal point for national GHG inventories:	
	Address:	
	Telephone:	Fax: E-mail:
	Main institution preparing the inventory	

General info	Date of submission:	
	Base years:	PFCs, HFCs, SF_6
	Year(s) covered in the submission:	
	Gases covered:	

		energy	ind processes	solvent use	LUCF	agriculture	waste
Tables	IPCC Sectoral report tables	☐	☐	☐	☐	☐	☐
	Background data tables	☐	☐	☐	☐	☐	☐
	IPCC Summary tables	IPCC Table 7A ☐			IPCC Table 7B ☐		
	CO_2 equivalent table	☐					
	Uncertainty	IPCC Table 8A ☐			National information ☐		
	Recalculation table	☐					
	Completeness table	☐					
	Anticipated improvements	☐					

CO_2	Comparison of	Worksheet 1-1	Percentage of difference	Explanation of differences
	CO_2 from fuel combustion	☐		

		energy	ind processes	solvent use	LUCF	agriculture	waste
Recalculation	CO_2	☐	☐	☐	☐	☐	☐
	CH_4	☐	☐	☐	☐	☐	☐
	N_2O	☐	☐	☐	☐	☐	☐
	HFCs, PFCs, SF_6	☐					
	Explanations	☐	☐	☐	☐	☐	☐
	CRF tables for sectors with changes	☐	☐	☐	☐	☐	☐
	Summary tables for all recalculated years	☐					
	Full CRF for the recalculated base year	☐					

		HFCs		PFCs		SF_6	
HFC, PFC, SF_6	Disaggregation by species	☐		☐			
	Production of Halocarbons/SF_6	☐		☐		☐	
	Consumption of Halocarbons/SF_6	Actual ☐	Potential ☐	Actual ☐	Potential ☐	Actual ☐	Potential ☐
	Potential/Actual emission ratio						

Reference to the National Inventory Report and/or national inventory web site	

CRF - Common Reporting Format LUCF - Land-Use Change and Forestry

[1] For each omission give explanation for the reasons on a separate page attached to the check-list